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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,743	06/13/2006	Seok Soo Kim	930086-2029	5014
7590 Ronald R Santucci Frommer Lawrence & Haug 745 Fifth Avenue New York, NY 10151				
10/24/2008				
EXAMINER				
BLAND, LAYLA D				
ART UNIT		PAPER NUMBER		
1623				
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10/24/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/582,743

**Applicant(s)**

KIM ET AL.

**Examiner**

LAYLA BLAND

**Art Unit**

1623

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7, 15, 16 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 15, 16 and 18-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 18, 2008 has been entered.

This Office Action is in response to Applicant's request for continued examination (RCE) filed August 18, 2008, and amendment and response to the Final Office Action (mailed March 18, 2008), filed August 18, 2008 wherein claims 8-14 and 17 are canceled, claims 1, 18 and 19 are amended, claim 20 is newly submitted.

Claims 1-7, 15-16 and 18-20 are pending and are examined on the merits herein.

In view of the cancellation of claims 8-14 and 17, all rejections made with respect to those claims in the previous office action are withdrawn.

### ***Claim Objections***

Claims 5-7 and 20 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 5-7 and 20 depend from claim 1 and include the limitation "further comprises injecting a diluent

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gas." Claim 1 recites the closed language "consists of," which does not permit additional steps.

The following are new or modified rejections:

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-7, 15, 16, and 18-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In the amendment submitted August 18, 2008, claim 1 was amended to include "consists of" in place of "comprises." The specification as originally filed does not provide support for a method with consists of steps a-d. The method of Example 1 includes steps other than a-d, such as addition of a diluent gas, addition of water, filtering, drying, and distribution using a sieve. Thus, claims 1-7, 15, 16, and 18-20 introduce new matter.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-7, 15, 16, and 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The claims are drawn to production of "powdered cellulose ether" by a process which consists of steps a-d. However, steps a-d will produce a crude reaction mixture, not powdered cellulose ether. The omitted steps are: washing, filtering, drying, and distribution.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 15, 16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onda et al. (US 4,091,205, May 23, 1978, PTO-1449 submitted May 13, 2006) in view of Haidasch et al. (US 3,251,825, May 17, 1986).

Onda et al. teach a process for preparing cellulose ethers comprising etherification of alkali cellulose followed by pulverization into a powder [see abstract].

Onda et al. teach a method wherein, starting from wood pulp, 100 parts of alkali cellulose, formed with sodium hydroxide, were placed into a reaction vessel and 15 parts of methyl chloride were added. The etherification reaction was carried out with stepwise elevation of temperatures; 40°C for 2 hours, then 50°C for 1 hour, then finally 80°C for one hour to produce the crude etherified product [column 6, Example 2]. The

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methylcellulose product was then pulverized to form a fine powder, having a particle distribution rate of 0-1.5% for particles of smaller than 100 mesh [column 5, Table I; column 6, Table III; column 7, Table V]. Loose bulk densities ranged from 0.176-.503 and tapped bulk densities ranged from 0.379-0.833, including 0.571, 0.465, 0.552, and 0.544 [column 5, Table I; column 6, Table III; column 7, Table V].

Onda et al. teach pulverization at the end of the etherification process instead of starting from a pulverized product, and the recited temperatures are about 5°C lower than the claimed temperatures.

Haidasch et al. teach a process wherein cellulose powder is etherified in the presence of alkali and methyl chloride at about 85°C. The reaction is continued until alkali is used up and then the reaction product is washed with hot water and dried [column 3, Example I]. If the residue is alkaline it can be neutralized by means of an acid [column 2, lines 71-72].

It would have been obvious to one of ordinary skill in the art to prepare cellulose ether from pulverized cellulose, employing the claimed temperature ranges. It has been held that merely reversing the order of steps in a multi-step process is not a patentable modification absent unexpected or unobvious results. Ex parte Rubin, 128 U.S.P.Q. 440 (P.O.B.A. 1959). Cohn v. Comr. Patents, 251 F. Supp. 437, 148 U.S.P.Q. 486 (D.C. 1966). Onda et al. disclose the use of temperatures which fall within those recited in claim 1, and are very close to those recited in the narrower claim 2. It is considered well within the skill of the skilled artisan to optimize these temperatures, especially given the guidance provided by Onda et al.

***Response to Arguments***

Applicant argues that Onda does not use pulverized cellulose as the starting material and that the skilled artisan would be directed away from using pulverized cellulose as the starting material. Applicant's argument is not persuasive because the use of powdered cellulose as a starting material for etherification is known in the art, as taught by Haidasch et al.

Applicant argues that rearranging the process steps of Onda would still require neutralization, not permitted by amended claim 1. Applicant's argument is not persuasive because neutralization is not always required for preparation of cellulose ethers, as taught by Haidasch et al.

Claims 5-7 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onda et al. (US 4,091,205, May 23, 1978, PTO-1449 submitted May 13, 2006) in view of Haidasch et al. (US 3,251,825, May 17, 1986) as applied to claims 1-4, 15, 16, 18, and 19 above, and further in view of Hitchin et al. (GB 909,039, October 24, 1962, of record).

Onda et al. teach as set forth above.

Onda et al. do not teach the use of a diluent gas.

Hitchin et al. teach the use of an inert diluent in the methylation of alkali cellulose with methyl chloride. Suitable diluents are dimethyl ether and diethyl ether. In diluting the methyl chloride, heat transfer is facilitated and the reaction can be controlled. The diluent also functions as a vehicle in assisting the penetration of the alkali cellulose

fibers by methyl chloride. The amount of diluent varies but good results were achieved using dimethyl ether as 45-90 percent by weight of methyl chloride [page 1, lines 61-78]. In one example, 600 lb of dimethyl ether was used for 320 lb of dry cellulose [page 2, Example 1].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a diluent in the above described method of Onda et al. The skilled artisan would have been motivated to do so and would have a reasonable expectation of success because Hitchin et al. teach that the use of an inert diluent such as dimethyl ether aids in controlling and facilitating the methylation of alkali cellulose.

#### ***Response to Arguments***

Applicant's arguments are substantially the same as those discussed above regarding the Onda reference.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAYLA BLAND whose telephone number is (571)272-9572. The examiner can normally be reached on Tuesday - Friday, 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anna Jiang can be reached on (571) 272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shaojia Anna Jiang, Ph.D./  
Supervisory Patent Examiner, Art Unit 1623

/Layla Bland/  
Examiner, Art Unit 1623